



The Leaky Bucket 2025

Retention Trends in Highly Skilled Immigrants and
In-Demand Occupations



Contents

3

Key findings

4

**Why Canada benefits
when immigrants stay**

5

Trends in onward migration

6

**Retention is weakest in highly
educated, skilled immigrants**

12

**Economic success influences
onward migration**

13

**Retention trends
vary across Canada**

15

From insight to action

16

**Appendix A
Methodology**

18

**Appendix B
Glossary**

19

**Appendix C
Bibliography**

Key findings

- Onward migration is a persistent trend, with one in five immigrants leaving Canada within 25 years of landing. Onward migration risk peaks 5 years after landing, making the early years of immigrants' time in Canada critical for retention.
- Onward migration risk increases with education level. Immigrants with doctorates are nearly twice as likely to leave Canada within 5 years compared to immigrants with a bachelor's degree.
- Onward migration risk is greater among higher-skilled immigrants. Five years after landing, these individuals are more than twice as likely to leave Canada as lower-skilled immigrants.
- Some of the next decade's most in-demand occupations have the highest 25-year onward migration rates. The fastest-growing occupations with the weakest retention are business and finance management, information and communications technology, engineering and architecture management, and manufacturing and processing engineering.
- Immigrants with stagnant or declining earnings have higher onward migration rates within 15 years of landing than immigrants whose earnings grow. This retention trend is pronounced in those with doctorates, who are nearly three times more likely to leave than those with bachelor's degrees when faced with no income growth.

Recommendations

- Develop a national retention policy framework to set targets, track performance, and guide immigration policy beyond selection alone.
- Invest in settlement supports tailored to highly skilled immigrants—such as bridging programs, licensing pathways, and personalized settlement plans—to reduce onward migration risk.
- Implement targeted retention strategies for high-demand occupations, including employer incentives, enhanced credential recognition, and stronger employment-related settlement services.
- Enhance employer capacity to create welcoming workplaces and provide mentorship, personalized settlement plans, and career development support to improve immigrant retention—especially in smaller communities.



A note on definitions

We measured onward migration as a rate. We determined this rate by first calculating the number of permanent residents who left Canada as a share of all those who arrived in the same cohort. We did this for each cohort (1982 to 2020), then averaged across cohorts to obtain an overall estimate. This overall estimate is what we refer to as the *average onward migration rate*. (See our glossary in Appendix B for more details.)

Cohorts are defined by the first year in which immigrants were physically present in Canada with permanent resident status. The first year is either the year in which someone arrived in Canada as a permanent resident or, for those already here (e.g., temporary residents, refugees), the year in which they obtained permanent resident status from within Canada. For brevity, we refer to this as the *landing year*.

Our study focuses on permanent residents of Canada. For brevity, we refer to these individuals as *immigrants*.

Statistics Canada uses the terms *emigration of immigrants* or *immigrant emigration* to describe immigrants leaving Canada.¹ For clarity and brevity, we use the term *onward migration* instead. We acknowledge that some publications use *onward migration* more narrowly to describe movement to a third country,² but we apply it to all cases of immigrants leaving Canada (including back to their country of origin).

See Appendix B for a full list of definitions.

Why Canada benefits when immigrants stay

In 2023, Canada experienced its highest population growth rate since the post-war baby boom, driven almost entirely by permanent and temporary immigration.³ The federal government responded by decreasing immigration targets by up to 24 per cent in its 2025–2027 Immigration Levels Plan.⁴ These abrupt cuts were projected to slow labour force growth and reduce real GDP by \$16.2 billion in 2026.⁵

This context is particularly noteworthy given Canada's demographic reality. The country's fertility rate has hit a record low of 1.26,⁶ placing it among the lowest in the world.⁷ With births declining and an aging population,⁸ Canada's immigration model has become essential for maintaining workforce levels and economic growth. Reduced immigration targets mean fewer newcomers will arrive. Coupled with onward migration, economic impacts will compound.

To address retention issues, policy-makers need a deeper understanding of not only who is leaving, but when they're leaving and from where. We explored these questions in our 2023 and 2024 *Leaky Bucket* reports⁹ and add to these insights here, focusing on the education, skills, and earnings growth of onward migrants. Armed with this information, policy-makers can better target their retention efforts to avoid Canada losing the people needed for economic growth.

1 Bérard-Chagnon and others, *Emigration of Immigrants*.

2 Kelly, "Onward Migration"; and Nekby, "Return vs Onward Migration."

3 Statistics Canada, "Canada's Population Estimates."

4 Immigration, Refugees and Citizenship Canada, "2024-2026 Immigration Levels Plan"; and Immigration, Refugees and Citizenship Canada, "2025-2027 Immigration Levels Plan."

5 Conference Board of Canada, *The Shift in Immigration Policy*.

6 This figure is children per woman, as defined by Statistics Canada.

7 Statistics Canada, "Births and Stillbirths, 2023."

8 Statistics Canada, *A Portrait of Canada's Growing Population*.

9 Dennler, *The Leaky Bucket*; and Monteiro, Guccini, and Hamman, *The Leaky Bucket 2024*.

Trends in onward migration

Canada's average annual onward migration rate climbed from 0.6 per cent in 2018 to 0.9 per cent in 2021. (See Chart 1.) While these annual rates may seem inconsequential, their cumulative impact is substantial: Over the past 25 years, Canada has lost one in every five immigrants to onward migration. When we look at immigrants' individual onward migration journeys, departure rates surge in the first 5 years after landing and gradually decline thereafter. (See Chart 2.)

These patterns align with our previous *Leaky Bucket* reports, with some differences in yearly estimates that require clarification. In our 2024 report, we identified a spike in onward migration rates in 2017, followed by a 20-year high in 2020.¹⁰ We still see this 2017 spike, but it's no longer surpassed by 2020 levels.

This is because our historical data become more complete over time. Across all our *Leaky Bucket* reports, we measured onward migration using tax data—when immigrants stop filing their taxes, we assumed they've left Canada. With each year that passes, we capture more late filers, which refines our historical estimates. Therefore, our 2020 data is more complete now than in previous reports, and the same will be true for our 2021 data in any future reports. (See Appendix A for details on the methodology.)

While 2020 is no longer the peak year for onward migration, it remains a critical point of reference. Despite global mobility restrictions due to COVID-19, immigrants still left Canada at higher rates in 2020 than in 2018 and 2019, when international movement was far less constrained. This finding suggests that even in the face of significant barriers to travel, onward migration persisted.

Another notable difference from last year's report is the spike in onward migration in 2007. In previous years, Statistics Canada excluded non-resident tax filers from the data.

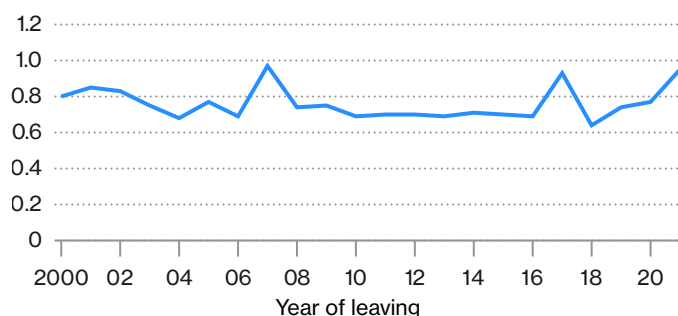
But in this report, we counted these individuals as onward migrants. (See Appendix A.) The spike occurred because 2007 had an unusually high number of non-resident tax filers compared to other years.

In the 2025 Annual Report to Parliament on Immigration, the federal government chose to stabilize permanent resident admissions at 380,000 for 2026, 2027, and 2028.¹¹ If current onward migration rates persist, of the 380,000 immigrants that arrive in 2026, we expect that 0.8 per cent (3,208 immigrants) will leave after one year, 1.0 per cent after two and three years (3,950 and 3,885), 1.1 per cent after four years (4,296), and 1.3 per cent after five years (4,902). Overall, 5.3 per cent (or 20,241 immigrants) will leave Canada by 2031.

Chart 1

Onward migration peaks in 2007 and 2017, then rises from 2018 to 2021

(year of leaving; average onward migration rate, per cent, 1982–2020 cohorts)

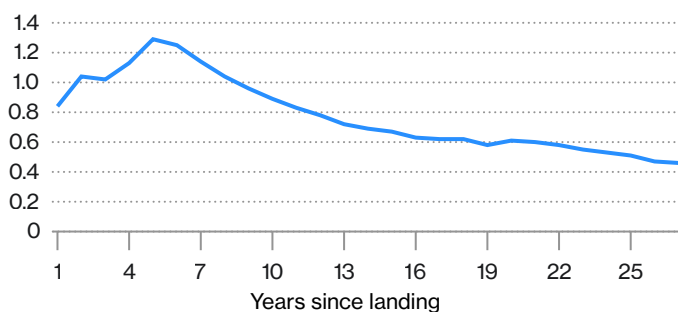


Sources: Statistics Canada; The Conference Board of Canada.

Chart 2

Onward migration surges in the first five years after landing

(years since landing; average onward migration rate, per cent, 1982–2020 cohorts)



Sources: Statistics Canada; The Conference Board of Canada.

¹⁰ Monteiro, Guccini, and Hamman, *The Leaky Bucket* 2024.

¹¹ Immigration, Refugees and Citizenship Canada, *2025 Annual Report to Parliament on Immigration*.

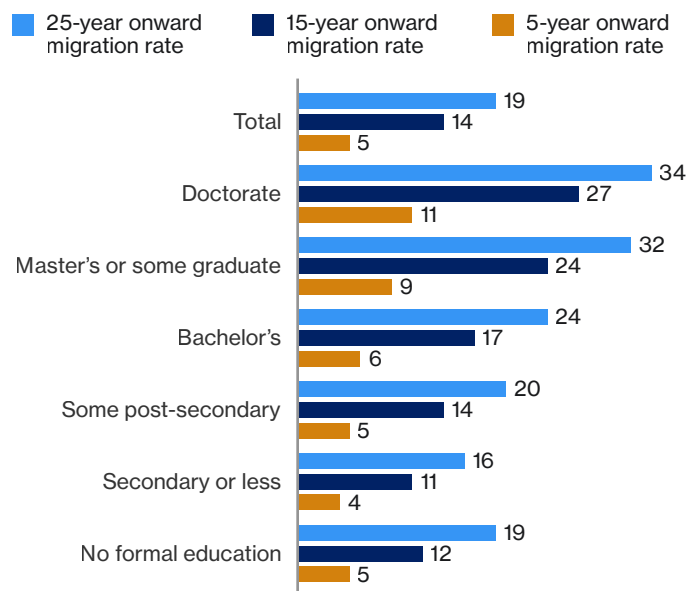
Retention is weakest in highly educated, skilled immigrants

Immigrants with higher education levels are more likely to leave Canada than those with lower education levels. (See Chart 3.) This finding holds true whether they left within 5, 15, or 25 years of landing. The one exception is for immigrants with formal education that does not exceed the secondary level, who are at slightly lower risk of leaving than immigrants with no formal education. Among those with a formal education, the gap is striking: Within 25 years of landing, immigrants with doctorates are more than twice as likely to leave Canada as those with a secondary education or less.

Chart 3

Immigrants with higher education levels are more likely to leave Canada

(average onward migration rate, per cent, 1982–2016 cohorts)



Sources: Statistics Canada; The Conference Board of Canada.

Results for occupational skill levels follow the same overall pattern: Regardless of the years since landing, higher-skilled immigrants are more likely to leave Canada than lower-skilled immigrants. (See Chart 4.) The gap is widest 5 years after landing, when higher-skilled immigrants are more than twice as likely to leave Canada as their lower-skilled counterparts.

Training, education, experience and responsibility (TEER) levels 0 to 3 are classified as high-skilled (management, professional, supervisory roles, and occupations requiring college education or apprenticeship training) and TEER levels 4 and 5 are classified as low-skilled (occupations requiring a secondary education or on-the-job training).¹² (See Appendix A.)

These findings reveal a tension in Canada's immigration system. The country's selection policies prioritize highly skilled and highly educated individuals,¹³ yet they are the very people most likely to leave. This finding mirrors what we saw in our 2024 *Leaky Bucket* report: Economic immigrants—those selected for their ability to drive Canada's growth—were more likely to leave Canada than refugees, immigrants admitted under family sponsorship, and all admission categories combined.¹⁴

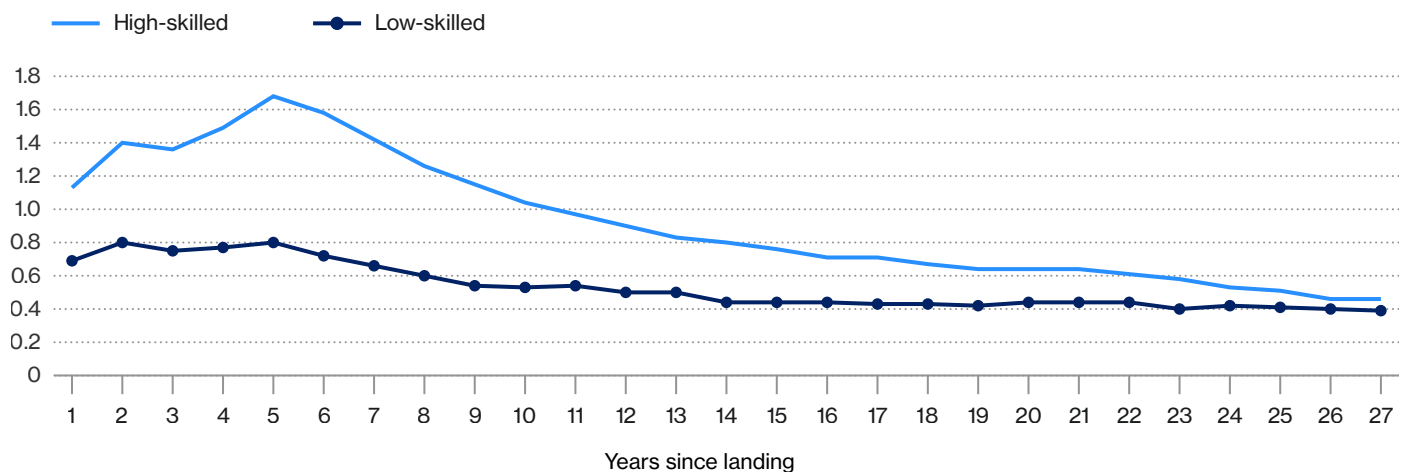
¹² Immigration, Refugees and Citizenship Canada, "Find Your National Occupational Classification."

¹³ Immigration, Refugees and Citizenship Canada, "Express Entry: Comprehensive Ranking System (CRS) Criteria."

¹⁴ Monteiro, Guccini, and Hamman, *The Leaky Bucket 2024*.

Chart 4

Immigrants with higher occupational skill levels are more likely to leave Canada
(years since landing; average onward migration rate, per cent, 1982–2020 cohorts)



Sources: Statistics Canada; The Conference Board of Canada.

Canada's settlement service system may be contributing to this problem. Immigration, Refugees and Citizenship Canada (IRCC) found that economic immigrants are the least likely to use settlement services, which IRCC attributed to economic immigrants having fewer needs.¹⁵ Another explanation, however, is that highly skilled immigrants face different labour market barriers than those with lower skill levels. For example, an internationally trained health professional may not need as much support with language but instead could benefit from support in breaking down licensing barriers. Services like bridging programs, licensing pathways, and personalized settlement plans would help address these barriers and have been shown to improve the retention of highly skilled immigrants.¹⁶

While Canada continues to attract many highly skilled workers, losing a proportion of our most qualified newcomers to other countries hurts our global competitiveness. Research suggests that tailored settlement services for highly skilled immigrants could help address this gap.¹⁷

Onward migration is highest among legislators and senior managers

Immigrants with experience in legislative and senior management roles have the highest onward migration rates, with 35 per cent leaving within 25 years of landing, compared to 19 per cent across occupations. (See Chart 5.) These immigrants are legislators, senior government officials, and senior managers in critical sectors like construction, healthcare, trade, and business. Scientists, artists, and healthcare professionals also leave at high rates—roughly 25 per cent of immigrants with such experience depart within 25 years of landing.

We used one-digit National Occupation Categories (NOC) codes for these analyses, which represent broad occupational categories.¹⁸

¹⁵ Immigration, Refugees and Citizenship Canada, *2023 Settlement Outcomes Report*.

¹⁶ Immigration, Refugees and Citizenship Canada.

¹⁷ Immigration, Refugees and Citizenship Canada.

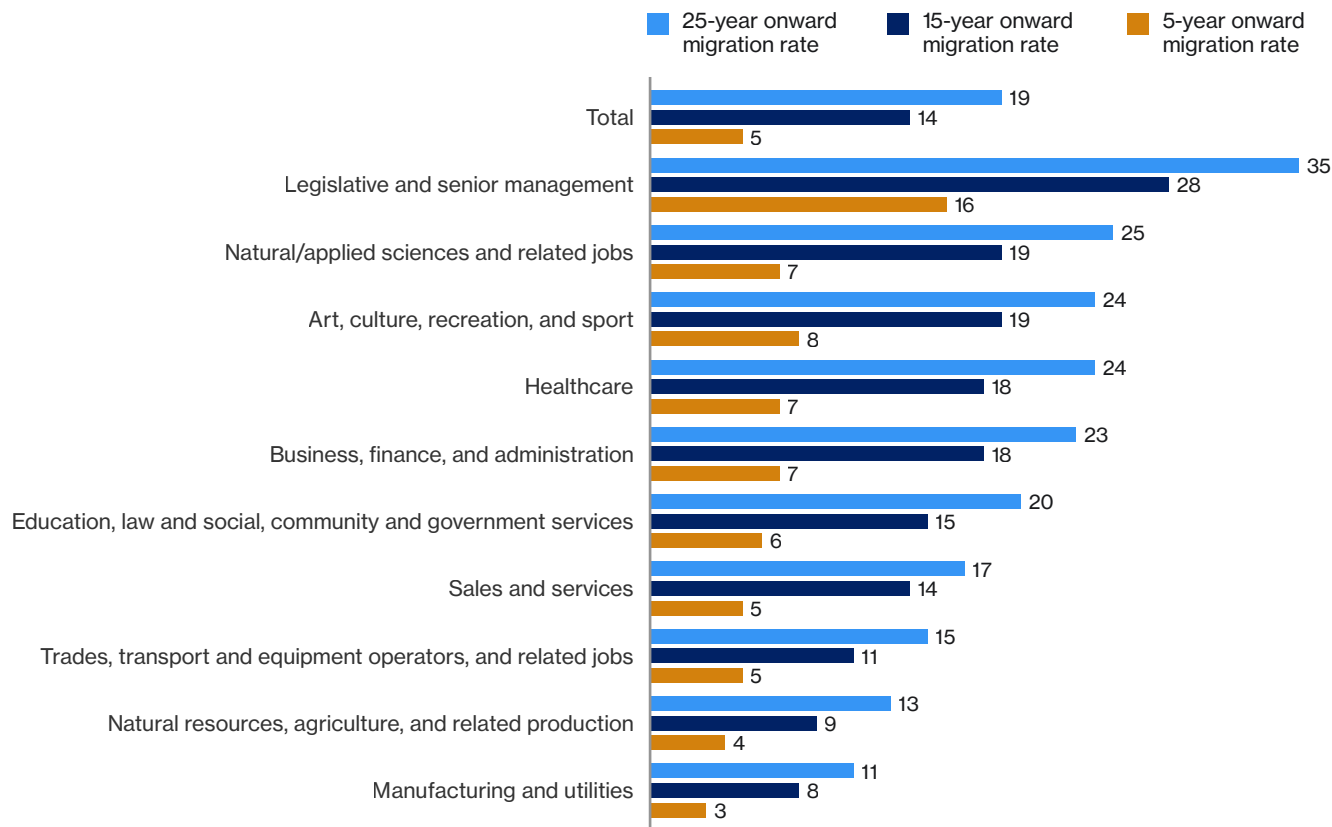
¹⁸ Employment and Social Development Canada, "Hierarchy and Structure."

Together, these professionals drive innovation, shape strategic vision, and deliver care to Canadians.¹⁹ The stakes are especially high in occupations with both high immigrant representation and high onward migration rates. For example, immigrants represent 24 per cent of Canada's construction managers,²⁰ 25 per cent of healthcare workers,²¹ 42 per cent of physicists and astronomers, and 57 per cent of chemists.²² These positions fall under the broad occupational categories with high growth and high onward migration rates.

The departure of these individuals may reflect several dynamics: For example, marketable professionals may have greater global mobility, Canada may have served as a strategic first destination en route to other markets, or their skills may not be fully utilized in the Canadian labour market. Regardless of the underlying cause, Canada is losing immigrants in critical occupations across high-demand sectors.

Chart 5

Onward migration is highest for those with legislative and senior management experience
(average onward migration rate, per cent, 1982–2016 cohorts)



Sources: Statistics Canada; The Conference Board of Canada.

19 Natural Sciences and Engineering Research Council of Canada, "NSERC Honours Scientists and Engineers"; and Senate of Canada, *Senate of Canada, Needed*.

20 Immigration, Refugees and Citizenship Canada, "Residential Construction Sector."

21 Immigration, Refugees and Citizenship Canada, "Health Care Sector."

22 Immigration, Refugees and Citizenship Canada, "Science and Technology Sector."



Occupational demand correlates with onward migration

Occupations with higher projected employment growth by 2035²³ tend to have higher onward migration rates. This finding is shown by the small positive correlation between these two variables in Chart 6.²⁴ Each dot in the chart represents an occupation. The horizontal axis shows the 15-year onward migration rate, and the vertical axis shows the projected employment growth rate for that occupation over the next 10 years (2025–35).

We found similar patterns for 5- and 25-year onward migration. We present 15-year results here because the time frame more closely matches the period for the employment growth projection. We used four-digit NOC codes for these analyses, which represent the second-most specific occupational category possible.²⁵

Chart 7 shows the 20 occupations with the highest projected employment growth in Canada²⁶ and their corresponding onward migration rates over 5, 15, and 25 years. We also used four-digit NOC codes for these analyses.²⁷

Immigrants who planned to work as business and finance managers had the highest onward migration rates overall: 10 per cent left within 5 years of landing,

24 per cent within 10 years of landing, and 32 per cent within 25 years of landing.

Immigrants critical to building Canada's information and communications technology sector also faced high onward migration risk. These individuals include those who planned careers in computer and information systems as well as software and web development. A total of 7 per cent of these individuals left within 5 years of landing, 17 to 19 per cent left within 15 years of landing, and 19 to 21 per cent left within 25 years of landing.

Immigrants essential to building infrastructure for a growing population faced heightened onward migration risk as well—particularly those planning careers as engineering and architecture managers or manufacturing and processing engineers. A total of 6 to 7 per cent of these individuals left within 5 years of landing, 12 to 15 per cent left within 15 years of landing, and 15 per cent left within 25 years of landing.

Therapy and assessment professionals had the highest short-term onward migration risk, with 8 per cent leaving within 5 years of landing. Their longer-term risk was also high: 14 per cent left within 15 years of landing and 16 per cent within 25 years

23 Conference Board of Canada, The, "The Model of Occupations, Skills and Technology."

24 Employment growth showed small but statistically significant correlations with onward migration at 5 years ($rs = 0.38$; $p < 0.001$), 15 years ($rs = 0.35$; $p < 0.001$), and 25 years ($rs = 0.30$; $p < 0.001$). See Appendix A.

25 Employment and Social Development Canada, "Hierarchy and Structure."

26 Conference Board of Canada, The, "The Model of Occupations, Skills and Technology."

27 Employment and Social Development Canada, "Hierarchy and Structure."

of landing. Between 4 and 6 per cent of dentists, optometrists, and audiologists also left during these three time periods.

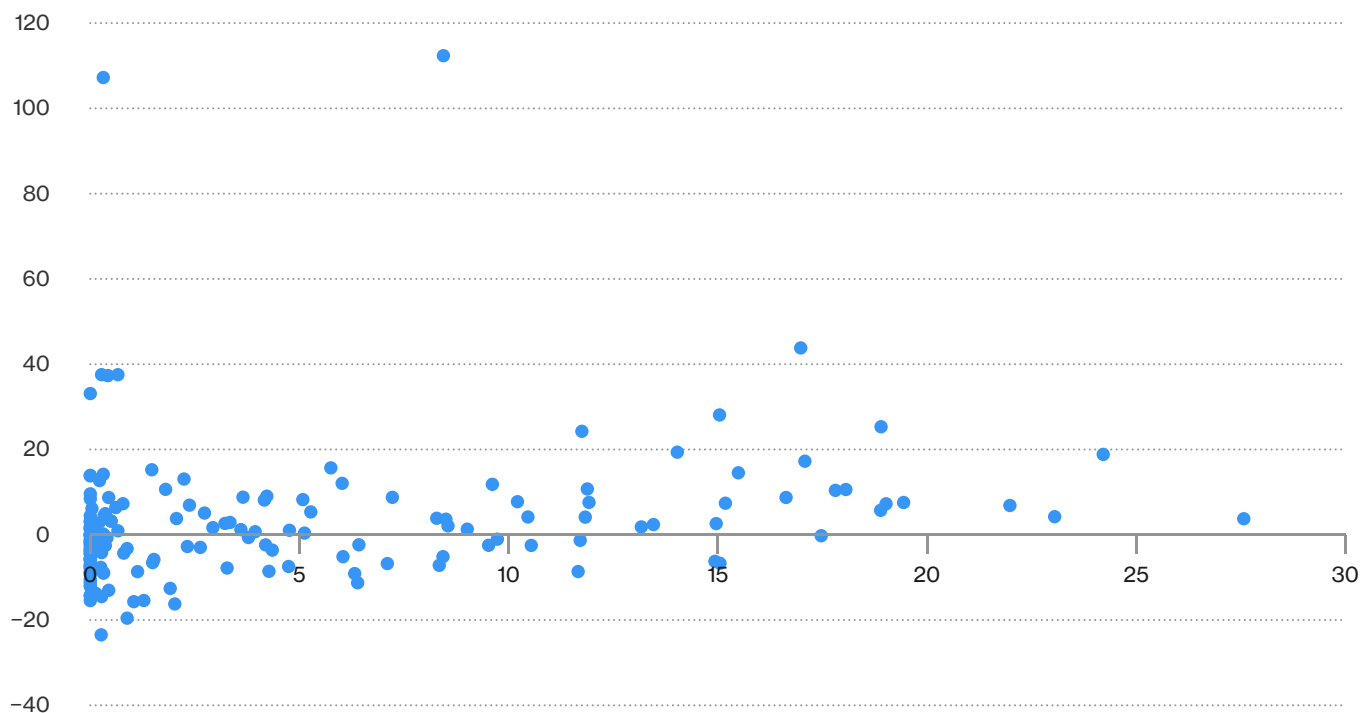
While these high-growth occupations show elevated onward migration rates, several others showed strong retention. For example, healthcare managers, technical therapy and assessment specialists (e.g., paramedics), transportation and production coordinators, and personal and delivery service drivers all had low onward migration rates.

Retaining immigrants in healthcare, information, and communications technology (ICT) as well as the construction sector is critical to Canada's economic growth. These sectors align closely with the federal mandate to become an energy superpower, build more affordable housing, and provide a stable workforce of ICT workers for firms that are increasingly adopting artificial intelligence in the workplace.²⁸ The federal government also committed to reducing healthcare backlogs, which demands the retention of skilled healthcare professionals.²⁹

Chart 6

Higher projected 10-year employment growth correlates with higher rates of onward migration

(10-year projected employment growth rate, 2025–35, y axis; average onward migration rate, per cent, for 1982–2006 cohorts, x axis)



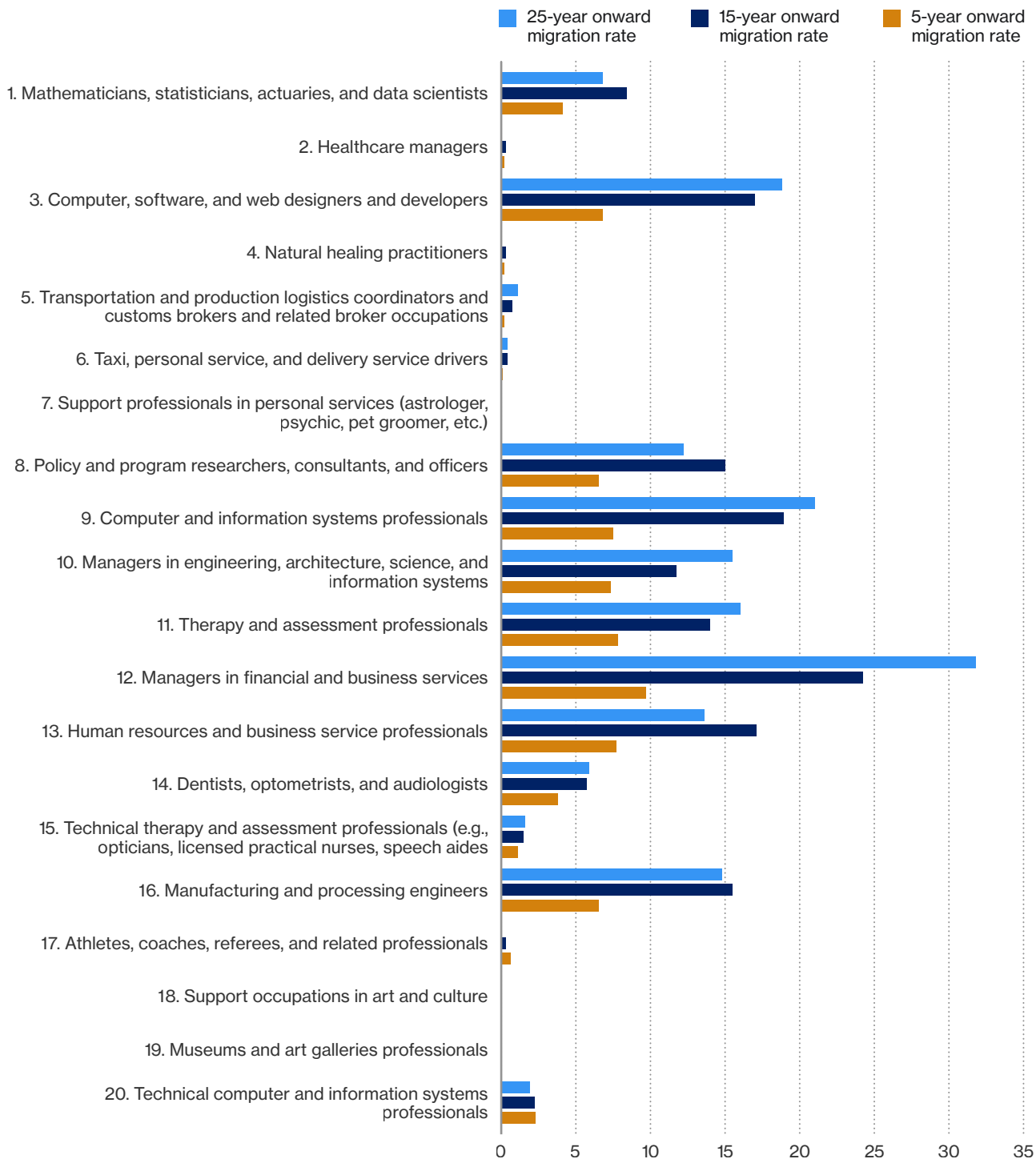
Sources: Statistics Canada; The Conference Board of Canada.

²⁸ Carney, "Mandate Letter."

²⁹ Health Canada, "Working Together."

Chart 7**The 20 occupations with the highest projected growth face varying onward migration risk**

(occupations projected to have the highest employment growth, 2025–35; average onward migration rate, per cent, for 1982–2016 cohorts)



Sources: Statistics Canada; The Conference Board of Canada.

Economic success influences onward migration

Immigrants are more likely to leave Canada if they're unemployed. (See Chart 8.) This is especially true for immigrants with graduate degrees and those with no formal education. Five years after landing, 4.6 per cent of unemployed immigrants with doctorates leave, which is nearly double the rate of unemployed immigrants with a secondary education or less. At the same time, unemployed immigrants with master's degrees or with no formal education are 1.5 times more likely to leave Canada than their unemployed counterparts with a secondary education or less.

We found similar patterns for 15- and 25-year onward migration. We present 5-year results here because they cover more cohorts. (See Appendix A.)

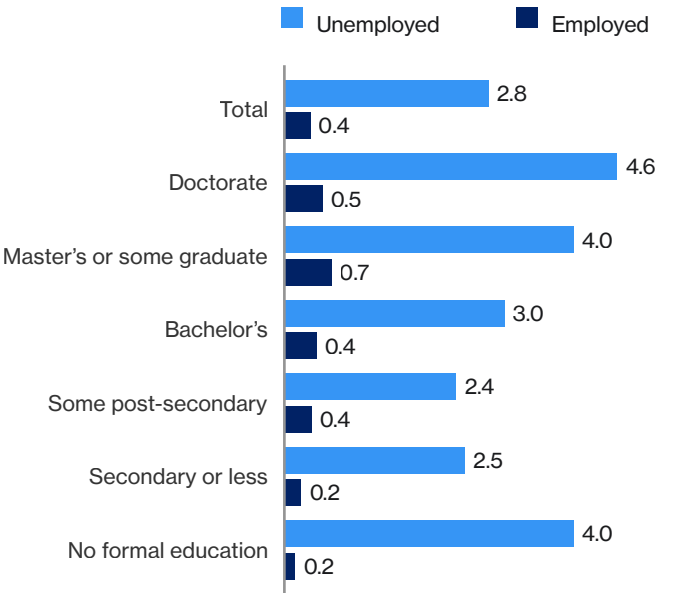
For employed immigrants, we explored whether income growth patterns were associated with onward migration. This analysis focuses exclusively on immigrants who earned a full-time income during any year of our study period. This threshold ensures we're measuring income trajectories from a point of meaningful labour market engagement.³⁰ (See Appendix A.)

Onward migration is highest in immigrants with stagnant or declining earnings and, by comparison, virtually non-existent in those with positive income growth. (See Chart 9.) The relationship between stagnant or declining earnings and onward migration is especially pronounced among those with graduate degrees. Over 15 years, immigrants with doctorates were nearly three times more likely to leave Canada when their earnings stagnated or declined compared to immigrants with bachelor's degrees. Faced with the same situation, immigrants with a master's degree or some graduate-level education were twice as likely to leave as immigrants with a bachelor's degree.

We found the same general pattern for 5- and 25-year onward migration. We present 15-year results here because they allow more opportunity for income growth while maximizing the number of cohorts included in the analysis. (See Appendix A.)

These findings reveal a vulnerability in Canada's immigration policy, which has prioritized selecting highly educated immigrants.³¹ Yet such individuals are the most globally competitive and most likely to be recruited by other countries. For example, from 1991 to 2023, immigrants were more likely than Canadian-born citizens to become U.S. permanent residents—with both groups showing similarly high education levels.³² Implementing a national retention policy that considers Canada's global competitiveness could help mitigate onward migration risk in highly educated immigrants.

Chart 8
Unemployment is associated with onward migration, especially for immigrants with graduate degrees and no formal education
(average 5-year onward migration rate, per cent, 1982–2016 cohorts)

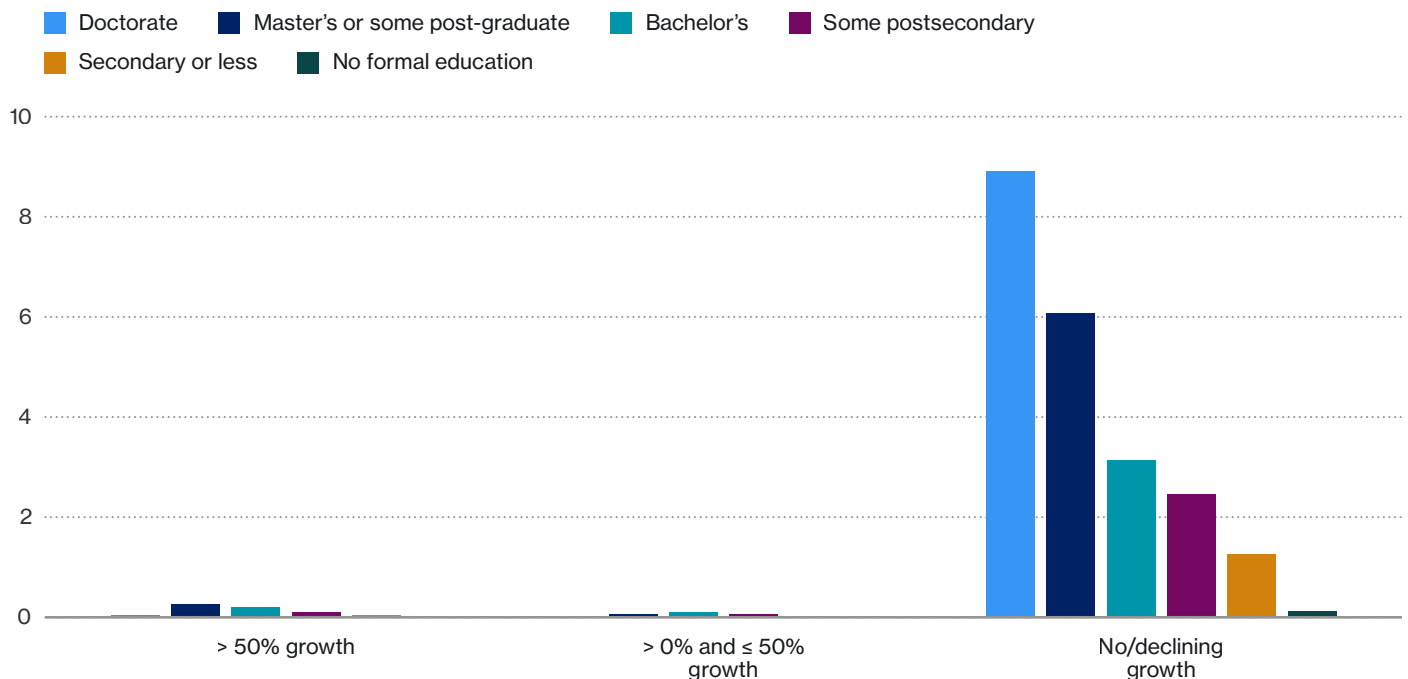


Sources: Statistics Canada; The Conference Board of Canada.

30 Dostie and others, "Employer Policies."
31 Immigration, Refugees and Citizenship Canada, "Express Entry: Comprehensive Ranking System (CRS) Criteria."
32 Hou, Yang, and Lu, *Recent Trends in Immigration*.

Chart 9

Higher projected 10-year employment growth correlates with higher rates of onward migration
(average onward migration rate, per cent, 1982–2006 cohorts)



Sources: Statistics Canada; The Conference Board of Canada.

Retention trends vary across Canada

The Atlantic region has the highest onward migration rates in Canada. (See Chart 10.) British Columbia and Quebec follow, while the Prairies, Ontario, and the territories retain immigrants more successfully.

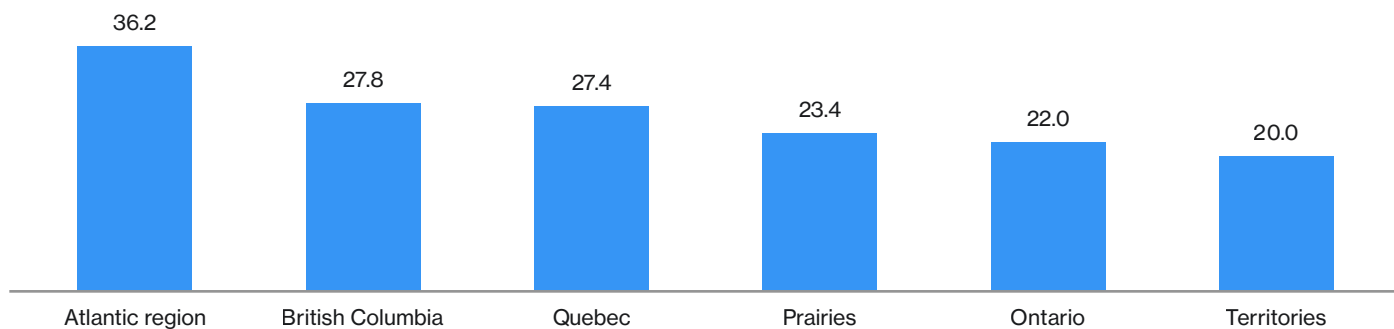
These regional differences raise an important question: Do immigrants try relocating within Canada before leaving the country, or do they leave directly from where they first settled? We examined this by comparing the province or territory in which immigrants intended to settle with the one in which they last filed taxes before leaving. We found that the large majority (83 per cent) of onward migrants left from the same province or territory in which they intended to settle.

This finding suggests that most immigrants who leave Canada do so directly from where they settled—they don't relocate within Canada first.

However, this national pattern doesn't hold everywhere. (See Chart 11.) Newfoundland and Labrador stands out: Over half of its onward migrants lived in a different province or territory before leaving Canada. Nova Scotia and Saskatchewan followed similar patterns, with roughly 40 per cent relocating within Canada first. Alberta, Quebec, and Manitoba saw moderate relocation rates among their onward migrants. British Columbia, Ontario, and New Brunswick had relatively low relocation rates, while onward migrants in Prince Edward Island and the territories left directly from these regions.

Chart 10

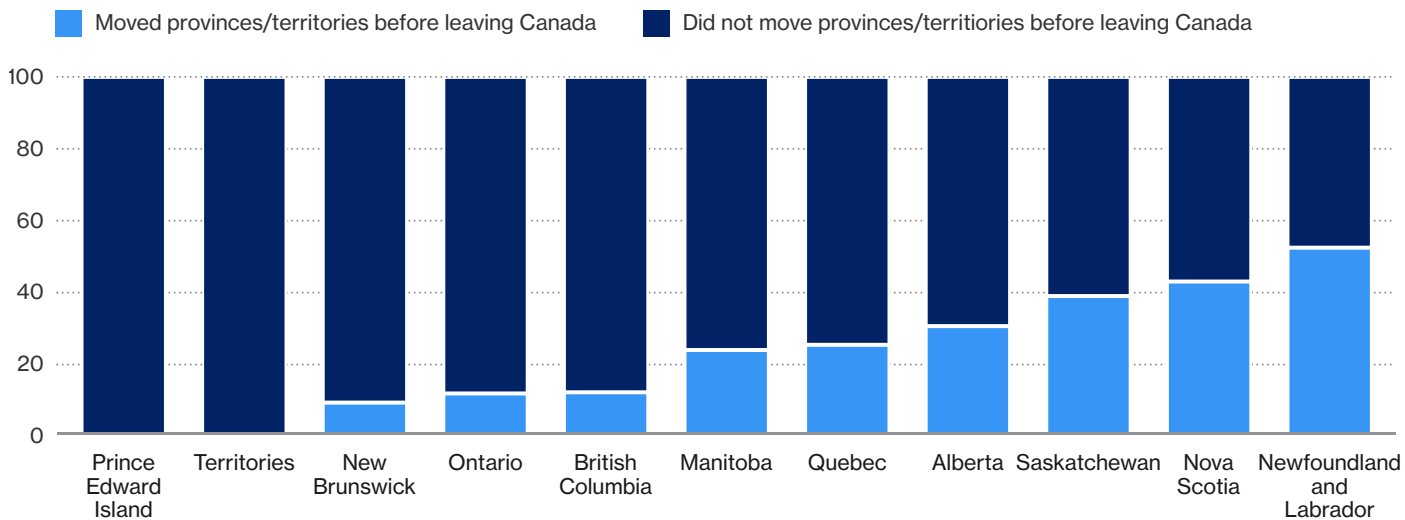
The Atlantic region has the highest onward migration rate of any region in Canada
(average 25-year onward migration rate, per cent, 1982–1996 cohorts)



Sources: Statistics Canada; The Conference Board of Canada.

Chart 11

Onward migrants in Newfoundland and Labrador were the most likely to move within Canada before leaving
(all 25-year onward migrants, per cent, 1982–1996 cohorts)



Sources: Statistics Canada; The Conference Board of Canada.

From insight to action

Not all immigrants who come to Canada will stay—this is an inevitable fact of migration. But immigrant retention is about more than how many immigrants come and go. It's also about who is leaving and why. With each iteration of our *Leaky Bucket* research, we learn more about onward migration trends and how well Canada's immigration system is meeting its goals.³³

With reduced immigration intake in the coming years, is Canada effectively retaining the immigrants it selects to meet its economic, social, and humanitarian goals?

To strengthen immigrant retention, Canadian policy-makers and employers can take the following actions:

Develop a national retention policy framework.

Canada's immigration system has a well-established selection policy, but it lacks a holistic retention policy.³⁴ While IRCC has acknowledged retention as a part of broader immigration policy,³⁵ a comprehensive framework for setting retention targets and tracking Canada's performance would help guide specific retention efforts.

Invest in settlement supports targeted at highly skilled immigrants.

Canada's immigration system is designed to select highly skilled, highly educated immigrants to support long-term economic growth. Yet these individuals face the highest onward migration risk. While IRCC established that economic class immigrants are less likely than other immigrant classes to use settlement services,³⁶ services like bridging programs, licensing pathways, and personalized settlement plans have improved the retention of highly skilled immigrants.³⁷ Expanding these programs, with a particular focus on the first three to five years after landing, is an untapped avenue for reducing onward migration risk among highly skilled immigrants.

Develop a targeted retention strategy for immigrants in high-growth occupations.

Canada's immigration system also functions to meet labour market needs by selecting immigrants who can fill critical roles. Within selection policy, strategies like Category-Based Selection (CBS) have been implemented to address acute labour shortages. This has been an important mechanism to bridge employers' needs with immigration selection policy. In 2025, CBS gave priority to immigrants with skills in healthcare and construction.³⁸ A similar strategy is needed for retention as onward migration is highest where occupational demand is the highest. Targeted retention strategies to address this issue include retention incentives for employers, enhanced credential recognition and career pathways, and stronger employment-related settlement services for in-demand occupations, including recruitment, job matching, hiring, and training, particularly in the first three to five years after landing.

Enhance employer capacity to recruit and retain immigrant talent.

Many skilled immigrants arrive in Canada with a job offer, which helps them enter the workforce and start earning soon after landing. However, given the high onward migration rates of immigrants who experience unemployment before leaving or stagnant earnings while in Canada, more can be done to ensure that immigrants not only enter the workforce quickly but thrive while they're here. Employers play a key role in making this happen. Employers can strengthen retention by creating welcoming workplaces, offering personalized settlement plans, and providing in-house supports such as mentorship and career development. These initiatives are especially effective in smaller communities and help improve retention outcomes.³⁹

33 Dennler, *The Leaky Bucket*.

34 Monteiro, Guccini, and Hamman, *The Leaky Bucket 2024*.

35 Immigration, Refugees and Citizenship Canada, *2025 Annual Report to Parliament on Immigration*.

36 Immigration, Refugees and Citizenship Canada, *2023 Settlement Outcomes Report*.

37 Immigration, Refugees and Citizenship Canada.

38 Immigration, Refugees and Citizenship Canada, "Canada Announces 2025 Express Entry."

39 Immigration, Refugees and Citizenship Canada, *2023 Settlement Outcomes Report*.

Appendix A

Methodology

Sample

Our study data came from Statistics Canada's Longitudinal Immigration Database (IMDB), which links immigration data with personal tax data.

Our sample includes people who:

- were granted permanent residence between 1982 and 2020;
- were granted permanent residence when they were 18 years of age or older; and
- have filed their taxes in Canada at least once since arriving.

We used tax filing activity as a proxy measure for onward migration. This information comes from Statistic Canada's T1 Family File (T1FF). The T1FF includes data on census families, individuals, and seniors obtained through their annual personal income tax returns.

Some elderly Canadians receiving only Old Age Security (OAS) and the Guaranteed Income Supplement (GIS) do not file tax returns due to low or no taxable income. However, the introduction of refundable credits—specifically the federal sales tax credit in 1986 and the goods and services tax credit in 1989—significantly increased tax filing rates among this group. By 2023, 95 per cent of Canadians aged 65 and older had filed tax returns, up from 75 per cent in 1989. These credits also contributed to higher filing rates among low-income families, improving the coverage of income data in the T1FF.¹

The last tax year covered in the dataset is 2022. People were counted as onward migrants if either of the following occurred:

- They were missing from the T1FF for two consecutive years, did not die in the last valid tax year, and remained missing until 2022. These individuals were counted as onward migrants the first year in which they were missing from the T1FF during this period.
- They were included in the T1FF but filed their taxes from abroad at least once before not filing again for two consecutive years and continued to do so through 2022. These individuals were counted as onward migrants starting from the first year in which they filed from abroad during this period. As a result, we cannot identify non-resident tax filers who did not meet the two-year threshold due to death or who filed as non-residents only in their final tax year.

Comparison with previous Leaky Bucket methodology

There was a methodological change in how non-resident tax filers were treated in this report compared to our previous reports.

In previous reports, Statistics Canada identified the last year immigrants filed their taxes. If they filed as a non-resident in that final year, they were excluded from the data provided to us.

In this report, we had Statistics Canada identify the last year in which immigrants filed their taxes as a resident of Canada. Doing so allowed us to count non-resident tax filers as onward migrants.

Consider this example of someone who landed in 2012 and filed taxes in the following pattern:

- 2012: No taxes filed
- 2013: No taxes filed
- 2014: Filed as Ontario resident
- 2015: Filed as Ontario resident
- 2016: Filed as non-resident
- 2017: Filed as Ontario resident
- 2018: Filed as Ontario resident
- 2019: Filed as non-resident
- 2020–2022: No taxes filed

Based on the previous method, this individual would be excluded from our analysis because they last filed their taxes as a non-resident.

Based on the current method, they would be included in our analysis and counted as an onward migrant in 2019, when they stopped filing their taxes as a resident of Canada during our study period.

This approach more accurately captures onward migration patterns.

1 Statistics Canada, "Section 1 - The Data."

Analysis

We examined the following characteristics of onward migrants:

- education level
- occupational skill level per TEER level²
- intended occupation per 2021 NOC code³
- 10-year projected occupational growth per our Model of Occupations, Skills and Technology (MOST)⁴
- employment status within one year before leaving
- T4 employment income growth from the first tax year earning a full-time income to the last full tax year in Canada (see below for more details)
- province or territory of intended residence
- province or territory of residence in the last year filing taxes in Canada

TEER levels 0 to 3 represent high-skilled occupations. Broadly, these occupations include management, professional, and supervisory occupations, as well as occupations that usually require a college diploma, apprenticeship training, or more than six months of on-the-job training. The remaining TEER levels (4 and 5) represent low-skilled occupations. These include occupations that usually require a secondary school diploma, several weeks of on-the-job training, or short-term work demonstration and no formal education.

Our 10-year projected occupational growth per our MOST is based on estimates of future employment growth between 2026 and 2035. The model does not include any occupation that does not already exist.

We examined the relationship between 10-year projected employment growth and onward migration using Spearman's rank correlation (r_s). This nonparametric correlation coefficient is ideal for examining the relationship between two continuous variables when one or both has outliers.⁵ Correlations of 0.20, 0.50, and 0.80 represent small, medium, and large effect size, respectively.⁶

We classified immigrants as unemployed if they had no T4 income in their last full tax year before departure. This classification included immigrants who had only non-T4 income (e.g., income from self-employment, investments, or government transfers). For example, if an immigrant left in June 2020, we counted them as unemployed if they had no T4 income from January to December 2019.

We calculated T4 income growth by comparing immigrants' earnings from their first year with a full-time income to their last full tax year in Canada before departure. For example, if an immigrant left in June 2020, we compared their first full-time income to their 2019 income. Following other publications on this topic, we

defined a full-time income as earning \$14,000 in 2012 adjusted for inflation.⁷ This threshold helps ensure that income growth is measured from a point of meaningful labour market engagement.

Limitations

Tax filing activity is an imperfect proxy measure for onward migration because some people file their taxes late. Hence, this measurement approach overestimates onward migration in recent years because people who file late are assumed to have left.

In 2024, Statistics Canada released a report on onward migration using a similar methodology to ours. However, their approach was stricter, counting immigrants as onward migrants if they did not file their taxes for at least three consecutive years.⁸ Our two-year cut-off slightly overestimates 2021 onward migration estimates in comparison because fewer late filers are captured. Still, we used this approach because it allowed us to include more cohorts and overestimation is minimal: There was a decrease of less than 0.1 percentage points in 2020 onward migration rates with the inclusion of three-year late filers in this report compared to our previous report, which counted these individuals as onward migrants per our two-year cut-off.

While the IMDB is a valuable resource for examining onward migration, its limitations affect our results. Data linkage issues mean one person can be counted as an onward migrant multiple times if they leave, come back, and leave again. Linkage issues can also occur when people refile their tax returns from previous years.

We tracked whether onward migrants relocated within Canada before leaving by comparing their intended province or territory of residence to where they lived when they last filed taxes. This approach underestimates national relocation because it misses people who relocated and then returned to their original region before leaving.

Our occupation-based analysis relies on intended occupation at admission as reported in the IMDB. This occupation can differ from actual occupation, particularly over longer periods, but actual occupation data is not available in the IMDB.

We used descriptive statistics to examine trends in onward migration and possible explanatory factors. Inferential statistics such as regression analyses would have allowed us to control for confounding factors like age, source country, family composition, admission class, or pre-landing experience. However, we did not have access to the individual-level data required for these types of analyses in this report. Any differences we describe between groups of onward migrants were not tested for statistical significance.

2 Immigration, Refugees and Citizenship Canada, "Find Your National Occupational Classification."

3 Employment and Social Development Canada, "National Occupational Classification."

4 Conference Board of Canada, The, "The Model of Occupations, Skills and Technology."

5 Khamis, "Measures of Association."

6 Sullivan and Feinn, "Using Effect Size."

7 Dostie and others, "Employer Policies."

8 Bérard-Chagnon and others, *Emigration of Immigrants*.

Appendix B

Glossary

Cohort: a group of immigrants who were physically present in Canada with permanent resident status the same year. This year is referred to as their *landing year*.

Landing year: the first year in which immigrants were physically present in Canada with permanent resident status. This categorization includes either the year someone arrived in Canada as a permanent resident or, for those already here (e.g., temporary residents, refugees), the year they obtained permanent residency from within Canada. Immigrants who landed in the same year are referred to as a *cohort*.

Onward migration: when a permanent resident leaves Canada to return to their country of origin or move to a different country.

Onward migration rate: the number of permanent residents who left Canada as a share of all those who arrived in the same cohort, averaged across the relevant cohorts (see below) and expressed as a percentage.

Annual onward migration rate: the average percentage of immigrants from 1982–2020 cohorts who left Canada to reside in a different country each year.

5-year onward migration rate: the average percentage of immigrants from 1982–2016 cohorts who left Canada within 5 years of landing. To avoid underestimating this figure, only cohorts with the opportunity to leave by the 5-year mark were included in analyses.

15-year onward migration rate: the average percentage of immigrants from 1982–2006 cohorts who left Canada within 15 years of landing. To avoid underestimating this figure, only cohorts with the opportunity to leave by the 15-year mark were included in analyses.

25-year onward migration rate: the average percentage of immigrants from 1982–1996 cohorts who left Canada within 25 years of landing. To avoid underestimating this figure, only cohorts with the opportunity to leave by the 25-year mark were included in analyses.

Professional occupations: require a university degree (bachelor's, master's, or doctorate) or previous experience and expertise in subject matter from a related occupation found in TEER when applicable.

TEER 0: management occupations.

Management occupations: occupations with management responsibilities, including legislators, senior managers, and middle managers.

TEER 1: occupations that usually require a university degree.

TEER 2: occupations that usually require a college diploma, apprenticeship training program of two or more years, or supervisory occupations.

TEER 3: occupations that usually require a college diploma, apprenticeship training of less than two years, or more than six months of on-the-job training.

TEER 4: occupations that usually require a secondary school diploma or several weeks of on-the-job training.

TEER 5: occupations that usually require short-term work demonstration and no formal education.

Appendix C

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